

WHAT IS CLAIMED IS:

1. A method of manufacturing a corn zein resin article comprising:

(a) forming a wet corn zein resin comprising:

(i) corn zein, and

(ii) about 20 to about 100 parts by weight of a fatty acid, per 100 weight parts of the corn zein;

(b) cold rolling the wet zein resin to provide a wet zein sheet of a predetermined thickness,

(c) drying the wet zein resin sheet at a temperature of about 40°C to about 90°C and a relative humidity of about 5% to about 20% to provide a dry zein resin;

(d) optionally grinding the dry zein resin to form particles of the dry zein;

(e) extruding the dry zein resin of step (c) or step (d) to form pellets of the dry zein resin; and

(f) forming the dry zein resin pellets under pressure and at a temperature of about 80°C to about 150°C to provide a zein resin article.

2. The method of claim 1 wherein the forming step (f) comprises extruding.

3. The method of claim 1 wherein the forming step (f) comprises blowing.

4. The method of claim 1 wherein the forming step (f) comprises thermoforming.

5. A method of manufacturing a corn zein resin article comprising:

- (a) forming a wet corn zein resin comprising:
  - (i) corn zein, and
  - (ii) about 20 to about 100 parts by weight of a fatty acid, per 100 weight parts of the corn zein;
- (b) cold rolling the wet zein resin to provide a wet zein sheet of a predetermined thickness,
- (c) drying the wet zein resin sheet at a temperature of about 40°C to about 90°C and a relative humidity of about 5% to about 20% to provide a dry zein resin;
- (d) optionally grinding the dry zein resin to form particles of the dry zein;
- (e) forming the dry zein resin of step (a) or step (b) under heat and pressure into an article.

6. A method of manufacturing a corn zein resin sheet comprising:

- (a) forming a wet corn zein resin comprising:
  - (i) corn zein, and
  - (ii) about 20 to about 100 parts by weight of a fatty acid, per 100 weight parts of the corn zein;
- (b) cold rolling the wet zein resin to provide a wet zein sheet of a predetermined thickness,
- (c) drying the wet zein resin sheet at a temperature of about 40°C to about 90°C and a relative humidity of about 5% to about 20% to provide a dry zein resin;
- (d) optionally grinding the dry zein resin sheet to form particles of the dry zein resin;
- (e) molding the dry zein resin of step (c) or step (d) under heat and pressure to provide a zein resin article.

7. The method of claim 6 wherein molding step (e) comprises extrusion and the zein resin article is a sheet, and the sheet is subjected to a second forming step under heat and pressure to provide a second article of manufacture.

8. A method of manufacturing a corn zein resin article comprising:

(a) forming a wet corn zein resin comprising:

(i) corn zein, and

(ii) about 20 to about 100 parts by weight of a fatty acid, per 100 weight parts of the corn zein;

(b) cold rolling the wet zein resin to provide a wet zein film of a predetermined thickness,

(c) drying the wet zein resin film at a temperature of about 40°C to about 90°C and a relative humidity of about 5% to about 20% to provide a dry zein resin film;

(d) optionally grinding the dry zein resin film to form particles of the dry zein resin;

(e) heating the dry zein resin of step (c) or step (d) at a sufficient temperature for a sufficient time to melt the dry zein resin particles and form a zein resin mass;

(f) cold rolling the zein resin mass to provide a zein resin sheet of a predetermined thickness; and

(g) forming the zein resin sheet at a temperature of about 60°C to about 120°C and under pressure to provide the article.

9. The method of claim 8 wherein forming step (g) comprises hot rolling.

10. The method of claim 8 wherein forming step (g) comprises hot pressing.

11. The method of claim 8 wherein forming step (g) comprises thermoforming.

12. An article of manufacture prepared from a corn zein resin manufactured by the method of claim 1.

13. An article of manufacture prepared from a corn zein resin manufactured by the method of claim 7.

14. An article of manufacture prepared from a corn zein resin manufactured by the method of claim 8.

15. An article of manufacture prepared from a corn zein resin manufactured by the method of claim 10.